

Euploea corinna (Common
Australian Crow) ♂
settled on *Nerium oleander*
(Oleander)



METAMORPHOSIS

AUSTRALIA

Magazine of the Butterfly & Other Invertebrates Club

ISSUE NO: 85

DATE: JUNE 2017
Price \$6.00

ISSN: 1839-9819
<http://www.boic.org.au>

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PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the magazine.
See BOIC Programme.

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Membership fees are \$30 for individuals, schools, and organizations.

AIMS OF THE ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

MAGAZINE DEADLINES

If you wish to submit an item for publication the following deadlines apply:

March issue – February 1st

June issue – May 1st

September issue – August 1st

December issue – November 1st

All articles should be submitted directly to the Editor daphne.bowden1@bigpond.com

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COVER PAINTING

Euploea corinna (Common Australian Crow) ♂ - Painting by Andrew Atkins, March-April 2017 - watercolour and gouache on watercolour board



FROM THE PRESIDENT

This edition of our magazine is a bumper one being the largest one yet. This is due, of course, to the wonderful support of so many contributors who sent a wide range of articles. I would like to list them all here but will leave you to discover them as you read. However, having said that, I will mention one of them, Bob Miller. Bob is a very long time member of the club and he contributed many articles in its early days. Having battled illness now for many years, it is wonderful that he has been able to send us his story on the Tawny Coster.

A number of club members visited the Bribie Island Butterfly House in late March to see the progress of this wonderful project and were deeply impressed by the planning and work that had been completed. There was already quite a number of butterfly species happily flying in the attractive butterfly enclosure. Soon the establishment will be open to the public. I am sure that there will be repeated visits by a large range of individuals and groups. Full marks must be awarded to Ray and Delphine Archer for steering and supporting the project, which has had amazing involvement of and by the local community. The BOIC management committee has resolved to make a cash contribution of \$2000.00 to assist in the final stages of completion.

Due to amendments of the relevant government legislation, it is necessary for the club to make some minor changes to its constitution. The committee is working on these and will take a final draft to a general meeting in August. If you would like to see the proposed new constitution, please email me at admin@butterflyencounters.com.au.

Best wishes, *Ross*

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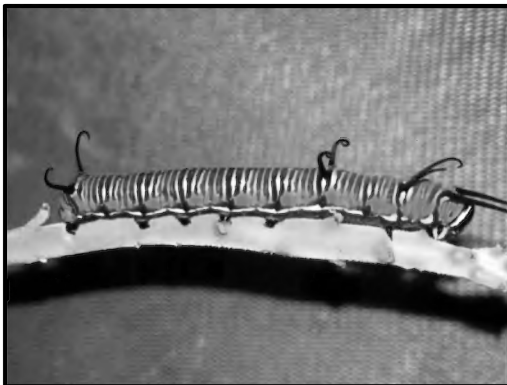
Raising Common Crow (*Euploea corinna*) Caterpillars – Paul Klicin

Last issue we explored raising the Monarch butterfly caterpillar along with my own personal experience with raising them.

Another fairly common butterfly is the Common Crow. Its distribution is quite widespread and abundant across Australia.



Common Crow distribution within Australia
Source: Braby. The Complete Field Guide to Butterflies of Australia



They are another very easy caterpillar to raise and kids find them interesting.

The larval food plant list for this caterpillar is quite extensive and Braby (2016) reports over 50 species of food plants (in the *Apocynaceae* and *Moraceae* families). You should not have too much trouble locating food for this caterpillar. Some common food plants you will often find growing in gardens are the Oleander (*Nerium oleander*) and the Weeping Fig (*Ficus benjamina*). Also quite commonly found in local bushland is the Monkey Rope vine (*Parsonsia straminea*). It is a favourite host plant of the Common Crow and one where you will often find tiny yellow eggs recently laid on the tips of fresh leaf growth. These butterflies will often be seen flying about these vines looking for a place to lay their eggs. These are easy to collect if you decide to and usually the caterpillar hatches within a few days of the eggs being laid. Make sure you have a fresh supply of new growth ready for when these tiny caterpillars hatch. A careful scan of these vines will often reveal a mature caterpillar or two. Being another voracious eater like the Monarch caterpillar, these caterpillars are also fast growing. For an extensive list of host plants for this butterfly and many others please refer to 'Butterfly Host Plants of South-east Queensland and Northern New South Wales'. This book is available for about \$12 from the Butterfly and Other Invertebrates Club.





Common Crow butterfly chrysalises

A unique feature of the Common Crow caterpillar is its shiny silver and sometimes gold chrysalis. In the background of the photo on the right is a just freshly formed pupa which has not yet turned that distinctive silver colour.



Newly emerged Common Crow butterfly

Butterflies emerge quite quickly from the chrysalis. If you want to witness this, and you leave the room for even a minute, you will probably miss it!

It doesn't take long for the butterfly's wings to unfold and dry out.



The next step, of course, is to release your newly emerged butterfly. Butterflies are not always ready to fly off straight away and depending on how long you have had them in your enclosure will depend on how ready they are to take flight.

Should you decide to raise these caterpillars please send in your photos with a short story on your experiences as we would love to hear from you.

Common Crow raised on Frangipani (Report on findings and observations) – Paul Klicin

I have recently completed some interesting findings regarding a host plant for the Common Crow that is presently not listed in the current 3rd Edition of the ‘Butterfly Host Plants of South-east Queensland and Northern New South Wales’ booklet.

About 12 months ago I was walking past a flowering Frangipani (*Plumeria rubra*) in my front garden and spotted a rather mature Common Crow caterpillar feeding on a leaf. Apart from the Monarch and Orchard Swallowtail, at this point in time, I was quite ignorant about the different varieties of host plant that different butterflies use. I contacted former, and now current, club President, Ross Kendall to quiz him about my find. If memory serves me correctly, Ross asked me if I was sure that I had identified the plant correctly as the Frangipani was not regarded as a host plant for the Common Crow. If I had indeed correctly identified the plant and the caterpillar was able to complete its life cycle and go all the way through to become a butterfly, this may be something worth writing about in the future as a new host plant. As I was new to butterflies and their host plants, I began to doubt myself as obviously the Frangipani was not listed in any printed sources that I could find. I pondered upon this for a short time before doing some research online and as it turned out, I had in fact identified the Frangipani plant correctly.



Frangipani (*Plumeria rubra*)

While it was not totally unheard of to find Common Crow caterpillars feeding on the Frangipani plant, the tales often told by others were that due to the sap of the

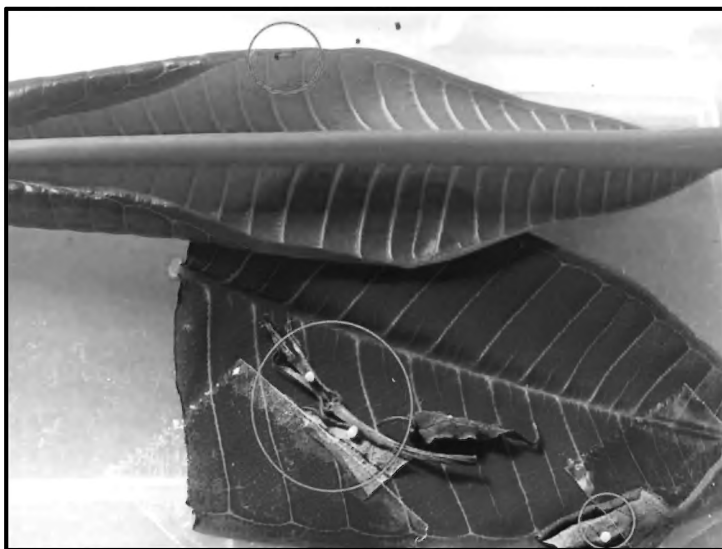


Frangipani being poisonous, more often than not the caterpillars would either die or the butterfly would fail to emerge from the chrysalis having died during metamorphosis.

As this was an unusual find, I removed the caterpillar from the Frangipani plant and decided to hand raise it. Perhaps I was lucky on this occasion but the caterpillar eventually pupated and emerged as a healthy butterfly. Considering that the Frangipani belongs to the Apocynaceae family (scientific classification) as reported in Braby's 'The Complete Field Guide to Butterflies of Australia' (2016) of being in the family of host plant to the Common Crow, I guess this should not come as a complete surprise.

After my first success in raising this caterpillar on Frangipani, I decided to prove this again but this time for a full life cycle. However, it was now coming into winter and the Frangipani dropped all its leaves so I would have to wait until Spring.

Once the warm weather returned and my Frangipani was covered in leaves again I visited some local bushland and collected 4 egg specimens of the Common Crow butterfly that had been laid on some Monkey Rope vine.

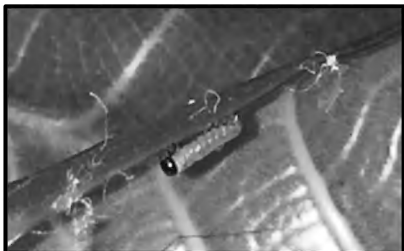


The 4 Common Crow butterfly eggs were left attached to the leaf of the Monkey Rope vine and taped down onto a Frangipani leaf to prevent the original host plant leaf from curling up when dried out. This was more for the purpose of being able to observe the eggs

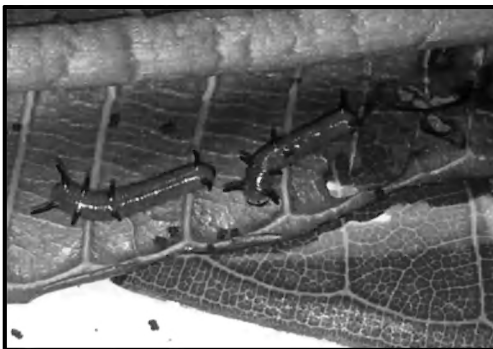
easily. Within 2 days the first caterpillar hatched from its egg (top of frame circled in red). The 2 eggs together circled in yellow hatched a day later. The 4th sole egg failed to hatch.



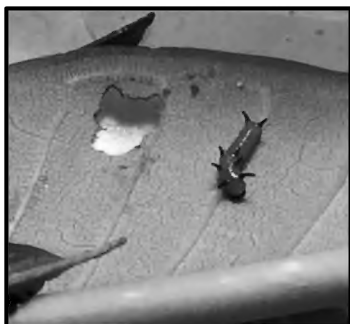
I noticed that whilst the Common Crow caterpillars appeared to grow more slowly than normal they had no problem feeding on the Frangipani leaf.



Common Crow caterpillar on Frangipani leaf

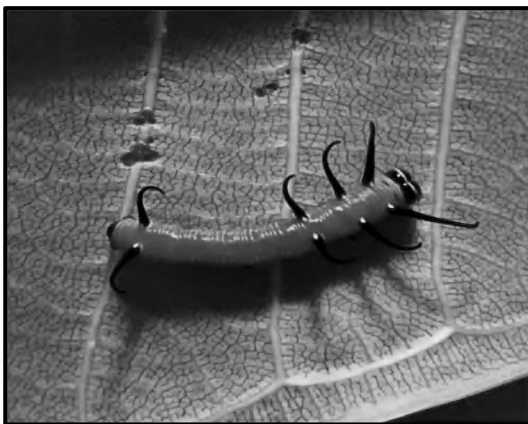


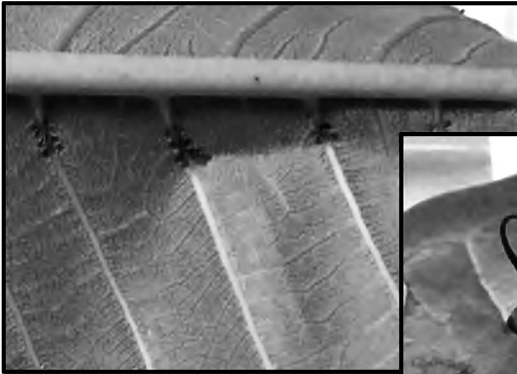
Notice how the early instar caterpillar avoids eating the secondary or lateral vein of the leaf that contains the poisonous sap of the Frangipani leaf. As the caterpillars grew larger they appeared to become less discerning regarding this practice and appeared more capable of devouring the secondary leaf vein whenever they felt like it (see later photos).



One morning, during the process of hand raising these caterpillars, I noticed a considerable size difference of one of the three caterpillars. Two had grown significantly larger overnight while the third caterpillar was still quite small. The following day the small caterpillar died leaving two caterpillars from the original four eggs collected.

An interesting observation I made was how the caterpillar chewed a hole in the secondary vein of the leaf to stem the flow of the poisonous sap. These chew holes shown in the photograph are very fresh and have just been made by the caterpillar. It will now make its way over to the edge of the leaf to begin feeding without the fear of being poisoned. A very clever caterpillar, indeed!

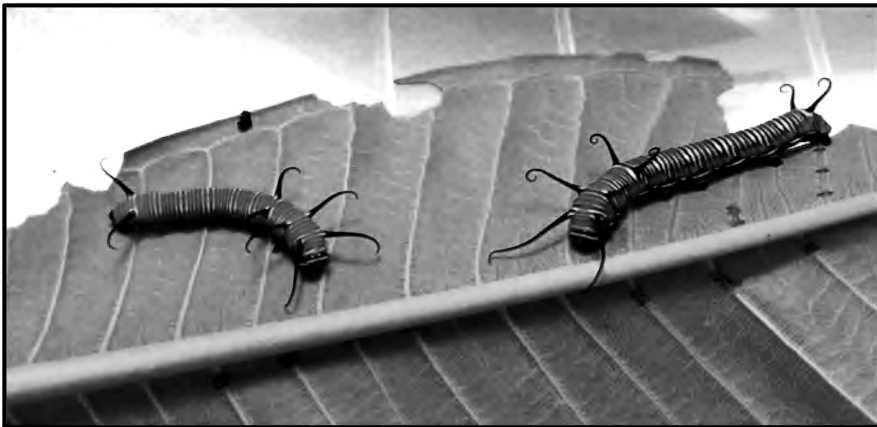




A good image of the strategically placed caterpillar chew marks designed to stem the flow of the Frangipani's poisonous sap.

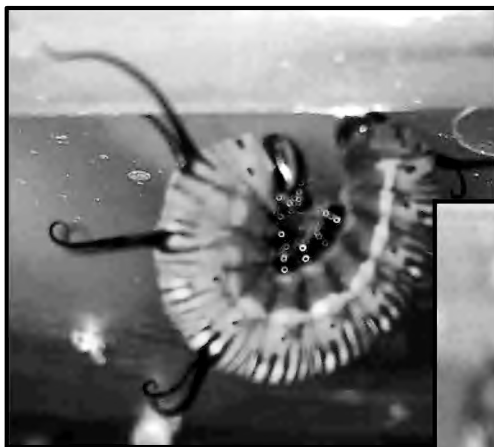


The Common Crow caterpillars continued to happily feed on Frangipani leaf.



I was surprised when not long after this photograph was taken the smaller of the two caterpillars decided to pupate while the other larger caterpillar continued to feed for another two days before pupating.





Raised on Frangipani leaf, Common Crow caterpillar test subject number one prepares to pupate. Two days later its mate did the same albeit with a significant size difference.



The moment of truth had arrived. Will the Common Crow butterflies emerge after being hand raised on Frangipani leaves or will they die before completing their life cycle as often previously reported?



The first Common Crow butterfly showing its colours is about to emerge.



First Common Crow butterfly test subject hand raised on Frangipani leaves.





Second Common Crow test subject hand raised on Frangipani leaves approximately 30 minutes before the butterfly emerged (left) and newly emerged butterfly.



Conclusion

Although the Common Crow caterpillars did not appear to grow to their full potential in size before pupating, as well as appearing to grow more slowly than what I have previously witnessed when raising them on other popular host plants, it cannot be ascertained with certainty that the reason for this was due to them being fed on Frangipani leaves or whether this was due to other environmental factors. Further research would need to be carried out

by raising an uncontrolled group of caterpillars on, for example, Oleander leaves and to compare this group with a control group of caterpillars raised simultaneously on Frangipani leaves to see if there are any observable differences in growth speed and size under identical environmental conditions.



Ready for release

Following this, I believe the next logical step would be to attempt to raise Common Crow butterfly larvae on other Frangipani species such as *P. obtusa*, *P. alba*, and *P. pudica*.

In conclusion, I successfully raised Common Crow butterfly (*Euploea corinna*) larvae on Frangipani (*P. rubra*) on two separate occasions and based on my findings and observations contained within this report I believe, with certainty, that Frangipani (*P. rubra*) should be classified as a host



plant for the Common Crow butterfly and should be recorded as such.*

It is my intention to petition to have the Frangipani (*P. rubra*) included as one of the listed host plants of the Common Crow butterfly (*E. corinna*) in any future updated reprints of 'The Butterfly Host Plants of South-east Queensland and Northern New South Wales' book and any other Butterfly and Other Invertebrates Club (BOIC) hosted digital media.

Next Issue: Raising Orchard Swallowtail caterpillars

If you have more questions or to see more please go to

<https://www.facebook.com/butterfliesandcaterpillars/>

or

<https://www.facebook.com/groups/187619097411/>

Reference

Braby, M., 2016. *The Complete Field Guide to Butterflies of Australia*. Second Edition. CSIRO Publishing.

Photos Paul Klicin

* Ed: Braby, 2000 in *Butterflies of Australia Their Identification, Biology and Distribution Vol 2*, notes several examples of eggs being laid and larvae found on *Plumeria acutifolia* (a variety of *P. rubra*) with some dying in early instar but several completing development to adulthood.

PRESIDENT'S REPORT FOR THE 2017 AGM

You will be aware that, due to unforeseen circumstances, members of the BOIC committee elected me to the position of club president in December 2016. I have resumed this role with a determination that the good work of the club will continue and that the stated aims of the club will be pursued with renewed vigour.

I thank Frank Jordan for his all too brief contribution during 2016 and wish him well in his future endeavours.

Our Vice-President for 2016, Alisha, has always been a cheerful participant in our activities and a steadying influence during the past year. We will miss her smiling face. We have witnessed the joy that she and Jon and have experienced in the parenting of Stanley and wish them further happiness with the imminent arrival of the fourth member of their family.

Lois has decided to "retire" from our committee. All of us thank her for her wonderful contribution of beautiful paintings and drawings over the years, for her informative reports and the often-entertaining articles about invertebrates in her garden.



Two years ago I wrote: “*The success of our magazine is a wonderful reflection of the interest and dedication of the many contributors. Many subscribers to the more “professional” publications now acknowledge the quality of the articles.*” This statement holds true today.

I also wrote: “*Much of the success of our club has come from the quiet dedication of Daphne over all the years.*” I know that I have used the term “sheet anchor” in relation to Daphne’s role in the past. Again, these statements hold true today. She maintains communication with a wide range of people from members and non-members, to authors and publishers – and our printer! The magazine arrives in the mail as the final product of consultation, compilation, proofreading, checking each member’s subscription status, preparation of labels and envelopes, filling those envelopes and getting them off in the mail.

Rob continues his long-serving work as the club’s treasurer and we are truly grateful for his professional management of the club’s financial records.

Paul Klicin took on the role of excursion convenor a year ago and his enthusiastic promotion of field trips has added new life to our activities. He assures us that he has trips already planned for a full year into the future!

The long awaited publication of the club’s mistletoe book took place in April last year following almost ten years of work by John and myself. In the book, we have acknowledged the contribution of many others who helped bring the project to fruition. The book has been critically acclaimed and has sold well – all costs have been recovered and the club is “well in the black”.

Almost all copies of the third edition of the host plant book, which was published in November 2010, have been sold and there is rather an urgent need to get a fourth edition under way.

It is important that more members become involved in the club activities both to share ideas and to help out at our various functions. All future quarterly planning meetings will be open to all members.

The past year has not been a good one for public displays. As these can be a significant way of getting information about the club out to a wide range of people, I would hope that we would achieve much more in the coming year.

Best wishes, *Ross*



New Distribution Records for Polyommata butterflies (Lepidoptera: Lycaenidae) in Australia, including biological notes.

Part II – *Nacaduba* and *Prosotas* – Kelvyn L. Dunn

Summary

This paper lists ten new and important locations in northern and eastern Australia for four species of butterflies from two genera: *Nacaduba* Moore, 1881 and *Prosotas* H.H. Druce, 1891 (Lepidoptera: Lycaenidae: Polyommatae). These species comprise *Nacaduba kurava* (Moore 1858) (White-banded Line-blue), *N. biocellata* (C. Felder & R. Felder, 1865) (Two-spotted Line-blue), *Prosotas nora* (C. Felder 1860) (Long-tailed Line-blue), and *P. dubiosa* (Semper 1879) (Purple Line-blue). Notes linked to selected records offer insight into the ecological circumstances and the significance of the sites to the species' broader distributions.

Introduction

Since 2001, I have sought to expand knowledge of butterflies in the more remote parts of Australia based on the belief that there remains much to learn about their spatial distribution across the continent. That focus has covered the smaller species of the family Lycaenidae, including those belonging to the genera *Nacaduba* and *Prosotas*, which are often less obvious in the field compared with the larger species of lycaenid butterflies. An experienced eye will help recognise potential haunts of these genera where the site-tenacious males may patrol, and where a knowledge of the local food plants, about which adults of both sexes often congregate or inspect, may enhance the chances of finding them. Seeking out flowering trees, for example, has long been conventional wisdom amongst those who have studied butterflies and other nectar-feeding insects, and these resources, where found, will increase the tally of species seen with less reliance placed on serendipity. The species covered in this part comprise *N. kurava* (White-banded Line-blue) (Fig. 1), *N. biocellata* (Two-spotted Line-blue) (Fig. 2), *P. nora* (Long-tailed Line-blue) (Fig. 3), and *P. dubiosa* (Purple Line-blue) (Fig. 4); the illustrations show the adults of each species in the field but those shown are not necessarily from the sites concerned (see captions for details). This paper records the results for these species from four field trips (from Victoria) to southern and central Cape York Peninsula (January 2001 & 2002), and to western Queensland (October and November 2011) and to the Gulf Country (September to November 2012). The spelling of scientific names aligns with Braby (2000), the main source used for this distribution-focused study.

Methods

The first part of this series on polyommata butterflies outlined the means used for routine data gathering (see Dunn 2017a); it also discussed the criteria used to underpin the validity of identifications. The examination of specimens in the hand



was the favoured approach. The means used to measure distances was outlined in an earlier piece (see Dunn 2016 and relevant references therein).

Results

The table lists four species from ten new locations (arranged from north to south) across northeastern Australia. All sites fall outside (or if not, then very close to) the boundaries defined or inferred by Braby (2000) for the species concerned and so are new on that criterion. A superscript indicates that field notes offer additional insight into particular records. These notes are anecdotal and may include references to encounters by other workers in the last decade or so, where their published new locations fall close to those listed in this report. Some may be augmented by one or more historic references where deemed informative. In addition to explaining the importance of particular sites in the table, these notes often discuss the ecological circumstances.

Table: New locations for Polyommata butterflies from beyond their known ranges in Australia

Species/Location	State	Geocode	Date	Format
<i>Nacaduba kurava</i> Little Laura River crossing, 12 km WNW of Laura	Qld	15°32'S, 144°21'E	11 Jan 2001	Obs.
<i>N. biocellata</i> 13 km W of Camooweal, at NT border signage	NT	19°55'S, 137°59'E	19 Oct 2012	Voucher
Camooweal (township)	Qld	19°55'S, 138°07'E	20 Oct 2012	Rel. ^{Note 1}
Walker Creek crossing, 28km by road NNE of Normanton	Qld	17°28'S, 141°11'E	14 Oct 2012	Voucher
<i>Prosotas nora</i> Mt White summit, near Coen, CYP	Qld	13°58'S, 143°12'E	06 Jan 2002	Rel.
<i>P. dubiosa</i> Walker Creek crossing, 28km by road NNE of Normanton	Qld	17°28'S, 141°11'E	14 Oct 2012	Voucher
Torrens Creek, in township garden	Qld	20°46'S, 145°01'E	28 Oct 2012	Voucher ^{Note 2}
1 km NE of Emerald, at caravan park	Qld	23°31'S, 148°10'E	10 Nov 2011	Obs. ^{Note 3}
Mt Scoria, along the base walking trail at 24°32.0'S 150°35.9'E	Qld	24°32'S, 150°36'E	07 Nov 2012	Rel. ^{Note 4}
Carnarvon Gorge at lodge, in garden	Qld	25°04'S, 148°15'E	12 Nov 2011	Obs. ^{Note 5}



Key to Table:

Note 1. Many males of *N. biocellata* were seen flying about the base of a wattle at Camooweal; the tree, which was shrubby in growth form and left unidentified, was situated in a drainage zone in the residential area close to the centre of the township. I netted and inspected two adults to confirm their identifications and then released them. The males were patrolling the leaf litter in shade directly below the tree; they were active during sunny conditions in mid-morning (watched between 0940-0950 h AEST), at which time the temperature was 32°C (five degrees below the maximum reached that day), and which was tempered by a light northeasterly breeze at that time. There were no adults flying about or perching on the foliage (that I noticed); the latter is the more usual behaviour of the butterfly, at least at other times of the day (Braby 2000, Dunn 2001, Orr & Kitching 2010, Braby 2016). It was likely that this was the beginning of a mid-spring brood at Camooweal, with males being newly emerged and having preceded the emergence of the females; in protandrous species, if this is an example, the appearance of the sexes is offset by a few days. ‘Protandry’, as used in entomology, is “the tendency for males to emerge before females” which gives them more opportunity to mate compared with those individuals that emerge later; “it is common in insects with discrete, non-overlapping generations in which females mate once only soon after emergence” (Bulmer 1983: 314). Braby (2000: 788) has noted from his own experience, or from that of others, that “males have been observed fluttering close to the ground beneath *A. aneura* trees” and he remarked later, that this behaviour occurs in the morning (Braby 2016). Grund and Hunt (2001) detailed a similar event during an autumn brood of the butterfly, one involving hundreds of males flying close to the ground below host plants in the far north of South Australia, again during the morning. Dunn (2001) reported an earlier encounter with a late winter brood in central Australia, where uncountable numbers of males were behaving similarly, once again during the morning. Dunn associated that phenomenon in the NT with the arid inland of the species’ range, having not seen or heard of similar behaviour in the coastal regions. On each of these occasions, the males were almost certainly seeking out females that may have been newly emerged from pupae, as suggested by Grund and Hunt (2001) for the event they had observed. More recently, Braby (2015a) described males behaving likewise beneath several host trees in northern WA, again this event took place during mid-morning; importantly, he confirmed that the behaviour had ceased by early afternoon (temporal evidence that earlier observers had not sought out). It has been long known that the larvae pupate in ant-galleries in the soil, or under stones and pieces of bark, or on fallen leaves and other debris near the base of the host plants (Waterhouse 1932, Fisher 1978, Braby 2000); hence, one might



anticipate the presence of emerging females in those places in season. Supportively, Braby (2000: 788) remarked that F. Douglas and J. Noelker had once found “numerous freshly emerged females” beneath a host plant that had just finished flowering.

Note 2. Three males of *P. dubiosa* were seen feeding at flowers of *Tridax procumbens* (Asteraceae) growing near a water tank in a vacant residential block in the main street (at 20°46'10"S, 145°01'16"E). The event occurred in early afternoon, between 1255 and 1400 h AEST (the duration of the visit). Dunn (2015) included this butterfly in a list of seven species seen feeding at these flowers at that site, and this record, which is spatially important, is now discussed in terms of its likely origin. Atkins *et al.* (2003) had earlier sampled extensively in the White Mountains National Park (to the north of the township of Torrens Creek). That survey, which had covered the Burra Range and the Warang Homestead area, including the nearby gorges, did not find evidence of this butterfly in 2000. Given this report of apparent absence more than a decade earlier, it is possible that the butterfly has since expanded inland to Torrens Creek, perhaps via the nursery trade. Indeed, personal survey of a number of sites along the Flinders Highway in 2011 and 2012, which included township gardens as well as areas of native vegetation, produced no other evidence of it. Alternatively, a small population in Torrens Creek may have established as a rare event of range expansion linked to the consecutive wetter-than-usual seasons that coincided with the survey. Supportively, a number of unusual range expansions for butterflies and moths occurred between 2010 and 2012 in southern and eastern Australia; those reports (listed chronologically) by Anonymous (2011), Dunn (2011a, b), Halsey (2011), Dunn and Field (2012), Faithfull and Dunn (2012), Morton (2012), Hewish and Hewish (2013), Dunn (2014), Haywood (2014), and Dunn (2015) discussed examples. The Torrens Creek encounter may also be linked to that same phenomenon; hence, an expansion event may have seen colonisation in the residential area after one or more female vagrants chanced upon garden-grown larval hosts in an earlier season. The larvae of *P. dubiosa* feed on the flowers and buds of at least ten species of *Acacia*, and one or more species of at least 14 other genera of plants in Australia (Braby 2016). This indicates a moderate number of host choices are available to the species; undoubtedly, some of these plants decorate residential gardens in the tropics, and other hosts likely exist that are still unreported at this time.

Note 3. Males of *P. dubiosa* were prolific near the entrance of the caravan park, just to the north of Twine St. (via Opal St.). They were, however, very localised about a single large Golden Dewdrops (*Duranta* sp. probably *erecta*; Verbenaceae), a species of flowering shrub native to central and South America, which was situated in a shady area opposite the office. The males



repeatedly patrolled the mauve flowers of this shrub, about two metres above ground, in mid-morning between 0930 and 1000 h (the duration of the inspection). The adults were seen at very close range, enabling their identification with certainty. A broader inspection revealed none elsewhere in the caravan park gardens, despite the presence of a number of flowering Golden Dewdrops in open areas of the premises. It is possible that the butterfly has recently expanded inland to Emerald, assisted by the nursery trade, as the species was not found in the broader region such as in areas of native vegetation along riverbanks or in the botanic gardens, which were similarly shaded to that section of the caravan park. Alternatively, the species may have expanded farther inland during the wetter-than-usual seasons from 2010 to 2012 (see Note 2 for discussion). The record from Emerald now stands as a western boundary one in central Queensland (*cf.* Braby 2016); at the time of the encounter the species was known no farther west than the Expedition Range (Atkins 1974), which, at that latitude, provided the western limit on the range-fill map by Braby (2000). Another population of the butterfly was found to the east in the Leichhardt Tree Memorial Park in Comet, two days earlier, on the 8th of November. These adults were active in late morning between 1100 and 1200 h (the duration of the visit) at which time a number of specimens were netted and examined; this was because most were perched several metres above ground and could not be inspected closely to see how many species might be represented. Here, in parkland, the adults were patrolling a foraging site where females visited from time to time, but the tree's flowers and buds might serve as larval food as well; an older adult (seemingly a female) is shown perched on one of the buds (Fig. 4). The flowering tree, which was an isolated planting far away from others, appears to be an *Archidendron* sp., and most likely either *A. lucyi* or *A. ramiflorum* (Mimosaceae), both of which have dense heads and white flowers (J.T. Moss pers. comm.); these are often planted as street, park or garden trees in the tropics as they are quite spectacular.

Note 4. Mount Scoria, SE by S of Biloela, is an inland location in the Gladstone region of central Queensland, where on the coastal plains to the east, the species occurs in Deepwater National Park and its environs (Moss *et al.* 1993), that being one of the few locations recorded for the butterfly in the region (Dunn & Dunn database). Mt Scoria stands as a western boundary record for *P. dubiosa* based on the range-fill map by Braby (2000). However, that location is now more or less within that broader inland distribution, that Braby (2016) has since proposed and for which the underpinning sources at that latitude are unknown. The Mt Scoria Conservation Park lies about 90 km W of Bulburin National Park where Moss and Jenkinson (2014) reported the species based on sampling in April 2011 (which was also during that period of unusual seasonality between 2010 and 2012). Curiously, those



same authors did not record the species farther inland in the Boyne Valley, at the Kroombit Tops National Park (about 40 km ENE of Mt Scoria), where the species would be expected to occur on probability.

Note 5. One hour and 45 minutes spent near the entrance to Carnarvon National Park, in the parkland-gardens of the Wilderness Lodge/restaurant including occasional meandering in the woodland just in the front of the lodge gardens, revealed at least 14 species on the wing during late morning and early afternoon that day. Among those species in the garden proper, I noticed a single adult *Prosotas* flying in a shady area near palms. A patient wait saw it perch on foliage (about one to two metres above ground), which allowed a close inspection. The prominent underside patterns, the elliptical, tornal spot on the hindwing and its anural state (untailed compared to its congeners and similar looking species) enabled its recognition to species with certainty. I left the adult *P. dubiosa* unsexed in my field diary; it was not examined in the hand and I could not inspect the upper side without it opening its wings (which it chose not to do). I had supposed that species was a resident of the nearby National Park and so was unaware, at the time, that the species was out of area (or at least unrecorded). Its presence in the Carnarvon Gorge district has probably been overlooked because of the limited survey in the region and because most of the area is a high-level conservation reserve, although Monteith and Yeates (1988), who surveyed at a dozen sites, did not record any *Prosotas* species from within the Mount Moffatt and Carnarvon National Parks. Alternatively, its presence at the lodge may be due to garden shrubs (and/or the nursery trade and/or vagrancy events leading to colonisation) and thus it could be absent from the nearby wilderness where surveys have been done. This new location, a remote outlier site, is about 170 km SSW of Blackdown Tableland, Expedition Range and about 170 km S of Emerald.

Discussion

Each of the records is from a location that falls either beyond or near the boundaries of the species' distributions, as interpreted from the range-fill maps provided by Braby (2000); that work provides a compendium of distributional knowledge and baseline information on the species involved which readers can seek if required. Dunn (2017b) considered the revised synoptic maps by Braby (2016) as less rigorous but recognised that they are useful to interpret areas where the species probably occur. Dunn (2017b: 2) recommended that "their usage should accompany the evidence-based original work of 2000 when comparing and discussing new distribution and important boundary records that make those distributions evidence-based."

Nacaduba biocellata stands as one species whose current range-fill map is worthy of scrutiny because of the major change in its distribution between that provided by Braby (2000) and the revision by Braby (2016). The presence of this butterfly at



Camooweal and in the broader region (including at the border in the NT, and Walkers Creek crossing, near Normanton, as listed in the table) is likely to be unexceptional distribution. Indeed, Franklin (2007) recorded *N. biocellata* at three sites to north of Camooweal, which, when taken together with these records, indicate that the species is almost certainly widespread across the Gulf Country; it clearly extends inland, via the Camooweal region, to central Australia, from where it is well known (*cf.* Braby 2000). Braby (2015b) has since sampled at four sites in the Normanton region, including at the Walker Creek crossing; his survey during May 2013 did not record this species so it may not be common in the area or, perhaps, is only seasonally present. The fine sites recorded herein add detail to the portrayal of that species' wider distribution as indicated in Braby (2016) and help support that new map for the area dealing with northwestern Queensland.

The incomplete knowledge of butterfly distributions, such as that of *N. biocellata* and others, in the inland of northern Australia, stems from a lack of exploration by insect collectors across the seasons (see Dunn & Dunn 2006), and that data paucity would explain most of these new spatial records. The reports of *Prosotas dubiosa* from gardens and parklands in the townships of Torrens Creek and Emerald, and in the lodge garden near Carnarvon Gorge would appear exceptional to this. These records from gardens may have their origins in vagrancy events associated with the wetter-than-usual seasons that took place in eastern Australia during 2010-2012, or they may have arisen through the dispersal of host plants by the nursery trade, or both. None of those records listed would appear to link into range creep associated with longer-term climate changes. In closing, the locations for the species tabled add to our understanding of the spatial distribution of these smaller butterflies across northern and eastern Australia; additional survey in inland areas will help strengthen knowledge of these and other species of polyommata butterflies.

Acknowledgements

John T. Moss (Qld.) kindly proofread the manuscript and offered probable identifications for the flowers in two photos.

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- Fig. 1. *N. kurava* male underside – IndigiScapes nursery campus (reserve), Capalaba, Qld.
- Fig. 2. *N. biocellata* (sex undet.) underside – 2 km NW of River Heads, Qld. feeding at a *Kunzea* sp. (Myrtaceae).
- Fig. 3. *P. nora* male under side – near Wrights Lookout, Kuranda, Qld.
- Fig. 4. *P. dubiosa* (sex undet.) underside – Comet, Qld. (mentioned in the text).

Photos by Kelyvn Dunn



The most important midge in the world and other midges – Bernie Franzmann

We know about biting midges – those little insects that bite us when we are on holidays at the coast.

But there are a few other kinds of midges. All midges are flies (Order Diptera).

The ones at the coast are called biting midges or sand flies and are in the Ceratopogonidae family. A member of this family, a *Forcipomia* sp. is the most important midge in the whole wide world, and is vital for the survival of the human race. It is the only pollinator of the cocoa plant and so without it, we would not have chocolate, and how could we survive without chocolate!

Another midge family, Simuliidae, are also known as sand flies or black flies. These ones are most common and irritating after floods in inland rivers in Queensland.

The little black moth-like insects, about as big as a match head, we sometimes see in the bathroom are moth midges (F. Psychodidae). They breed in the drain pipes.

The midges most commonly seen are those in the family Chironomidae. There are more than 200 species in Australia. They look like mosquitoes but they don't suck blood. I find the easiest way to tell that they are not mosquitoes, apart from them not sucking on you, is that they have long front legs and mosquitoes have long back legs. But of course, there are exceptions to this.

F. Cecidomyiidae – gall midges. This is a large family in Australia with more than 100 species. The larvae of most species live in galls in living plants – hence the name.

I studied one of these insects for about 15 years – the sorghum midge *Stenodiplosis sorghicola*.

This tiny midge (it's about half the size of a mosquito) is the most devastating pest of sorghum in Australia and indeed many other countries. It attacks sorghum in North and South America, India, and across sub-Saharan Africa, where sorghum is a staple food.

I could fill up the whole magazine about this insect but I thought you might be interested in two aspects of its biology.

1st aspect - At the onset of winter the larvae, after developing on the sorghum grain, enter a state of hibernation which is called diapause. They fall to the ground as the plants die, and stay in hibernation for the winter months. They do not pupate until they are wet by spring rains. After they are wet they pupate and emerge as adults about two weeks later.

Now if you take these diapausing larvae, in the winter, before they get wet, and put them in a dry place, they can stay alive for many years. After being kept dry for up to



5-6 years, if they are wet they will emerge as healthy adults about two weeks later. I think that's amazing.



A sorghum midge laying eggs in a sorghum flower.

2nd aspect - Female sorghum midges that don't mate don't lay any eggs and so have no progeny. "So what?" you say. Well, thousands of wasp species (Hymenoptera) produce offspring if they don't mate. In most of these cases, the progeny from unfertilized eggs are male.

On the other hand, mated female sorghum midges produce either male or female offspring. Again, "so what?" Well, what I mean is that they produce unisexual progeny i.e. either all male or all female and never a mixture.

If that's not amazing, I think at least it's interesting.

Tree-nymphs (Lepidoptera: Nymphalidae: Danainae) – *Peter Hendry*



I first encountered the genus *Idea*, commonly known as Tree-nymphs, in the collection of the late Jim Pickering now in my care. It would be many years later, on a recent trip to the Butterfly Park and Insect Kingdom on Santosa Island, Singapore, that I would finally see live specimens of these magnificent butterflies. The Tree Nymphs have a beauty of their own based on size (up to

160mm) and their simplicity in design, the wings being mostly patterned in shades of black and white.

The genus *Idea* was raised by Fabricius, 1807 in Karl Illiger's *Magazin für Insektenkunde* (Magazine for Insects) Vol. 6. In it he placed Linnaeus's species *Papilio idea*, named in 1763, making it the type species, now *Idea Idea*. The genus contains twelve species most of which have several subspecies, in particular, *Idea leuconoe* has twenty three subspecies. The *Idea* belong within the Subtribe: Euploeina of the Tribe: Danaini, and from here we can see they are closely related to the Crows, *Euploea* and like the Crows, the males have hair pencils.





While the Crows have a single pair of hair pencils the *Idea* have two pairs. Anyone who has held a male Common Crow, *Euploea corinna*, by the wings would no doubt have noticed it curl its abdomen and display its yellow bunch of hair pencils. These hair pencils are used to release pheromones during courtship, they also release a poisonous substance used to protect it from predators. Like all butterflies that use poisons for protection mostly extracted from host plants, they attract mimics. In the case of *I. leuconoe*, it has a remarkable mimic in the form of *Graphium idaeoides* a non-poisonous species of

butterfly in the family Papilionidae which is endemic to the Philippines.

Of the twelve species of *Idea*. most occur in Southeast Asia, while the Malabar tree-nymph, *I. malabarica*, is endemic to India and the Ceylon tree-nymph, *I. iasonia*, is endemic to Sri Lanka. The larva feed on plants in the family Apocynaceae including *Parsonsia* and *Aganosma* spp, in particular, *Aganosma cymosa*, a tree which grows to ten meters and is used by several species. Their flight is slow and weak, they often just glide giving rise to another common name, Paper Kites.



It was a great experience to encounter the Tree-nymph live, albeit in a butterfly enclosure. The species at the Singapore butterfly park is *I. leuconoe* and one that is held in many butterfly parks throughout the world. There were several adults on the wing and many more emerging in the nursery.



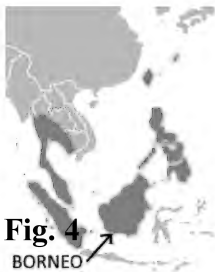


Fig. 4
BORNEO

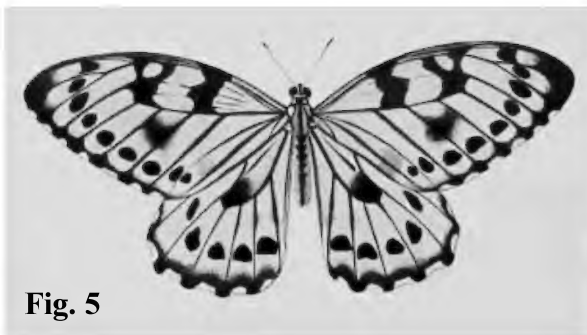


Fig. 5

Fig.1 *Idea leuconoe*

Fig.2 *I. leuconoe* underside

Fig.3 *I. leuconoe* emerging

Fig.4 Distribution map of *I. leuconoe* - https://en.wikipedia.org/wiki/Idea_leuconoe

Fig.5 *Graphium idaeoides* a mimic to *I. leucine* as illustrated by William C. Hewitson in *Illustrations of New Species of Exotic Butterflies*. C1877

Thanks to The Biodiversity Heritage Library: <http://www.biodiversitylibrary.org/> and the Smithsonian Libraries for access to *Illustrations of New Species of Exotic Butterflies* Vol 6

Photos 1-3 Peter Hendry

Some Notes on the Biology of Longhorn Beetles (Coleoptera: Cerambycidae), and Some Problems with *Rhytiphora* Taxonomy – *Alexander A. Davies¹* and *Trevor A. Lambkin²*

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Introduction

The family of longhorn beetles (Cerambycidae: Coleoptera) is one of the largest cosmopolitan groups of beetles. Slipinski and Escalona (2013) indicated that there are approximately 33,000 described species worldwide with the greatest diversity being in subtropical and tropical regions with the group being particularly diverse in Asia and South America. In Australia, there are around 1400 described species (Slipinski and Escalona 2013) and these comprise the three major subfamilies of Cerambycinae, Lamiinae and Prioninae. Adult longhorn beetles are good fliers and are often attracted to lights. Many are nectar and foliage feeders and some feed on the bark of trees (Lawrence and Britton 1991, p 672). The larvae are phytophagous and feed on rotting wood of trees, roots or may even form galls (Lawrence and Britton 1991, p 672). One of the largest Cerambycine subfamilies is Lamiinae (with 536 described species) (Slipinski and Escalona 2016) which comprises large flightless desert dwellers such as *Microtragus* White and *Athemistus* Pascoe, species that attack fig trees, for



example, *Rosenbergia megalcephala* Van de Poll 1886, and the acacia feeders, *Ancita* Thomson and *Rhytiphora* Audinet-Serville. Australia's largest beetles, *Batocera* spp Dejean are in the subfamily Lamiinae.

One of the largest genera within the Lamiinae is *Rhytiphora* which currently has 206 described species (Slipinski and Escalona 2013). The genus *Rhytiphora* is found in the Mascarene Islands, Pacific Islands, East Asia, India, Melanesia, Moluccas, New Guinea and Australia (Slipinski and Escalona 2013). Until recently the genus *Penthea* Dejean was included in the *Rhytiphora* until Slipinski and Escalona (2013) synonymised *Penthea* into *Rhytiphora*. They mainly based this on all male *Rhytiphora* possessing setose sex patches on the second abdominal ventrite (Figs 1, 2). The females lack these sex patches (Figs 3, 4). Species of *Rhytiphora* have relatively short and robust antennae, roughly the length of the body in males and shorter in the females (Moore 1996) (Figs 1-4). The larvae are predominantly *Acacia* borers. Despite some hostplant relationships of the larvae of Lamiinae being known (Slipinski and Escalona 2013, Lawrence and Britton 1991) little is published on the hosts of the adults (Slipinski and Escalona 2013).

In this paper, we report on a medium sized, black and white *Rhytiphora* sp. that we tentatively refer to here as nr *solida* (Pascoe) 1863 collected on *Acacia* at Mt. Cotton in south eastern Queensland, and we compare it to *R. vermicularia* (Donovan) 1805. In addition, we report on the behaviour of the adults.

Field Observations

Two longhorn beetles (1♂ and 1♀) (Figs 1-5) were collected from the stems of young plants about a metre high of *Acacia implexa* (Benth) (Fabaceae) (Figs 6, 7) (Queensland Museum 2003) in undisturbed open dry Eucalypt forest at Mt. Cotton. In captivity, adults fed on the epidermis and cambium of small stems of the host plant (Fig. 8) which eventually killed the stems. When disturbed, adults either dropped to the ground feigning death or were observed to wrap their legs and clamp their mandibles around the stems presumably to avoid being dislodged by predators (Fig. 9). Adults survived well fed in small collapsible mesh cages, on *Acacia* for at least three weeks, prior to being preserved for the taxonomic study.

Rhytiphora species nr *solida* (Pascoe) 1863

Specimens examined: QUEENSLAND: 1♂, 1♀, Mt. Cotton, Qld, 27° 36' 42" S 153° 12' 42" E, 18.i.2016, A.A. Davies & T.A. Lambkin (A.A. Davies colln.).

R. vermicularia (Donovan) 1805

Specimens examined: QUEENSLAND: 1♀, Dunmore, via Dalby, Qld, 23.xii.1980, M. De Baar, 1♀, Kingaroy, Qld, 23.i.1987, A.I. Knight, 1♀, Dunmore S.F., N. of Cecil Plains, Qld, 20.xi.1987, T.A. Lambkin, (all A.A. Davies colln.).

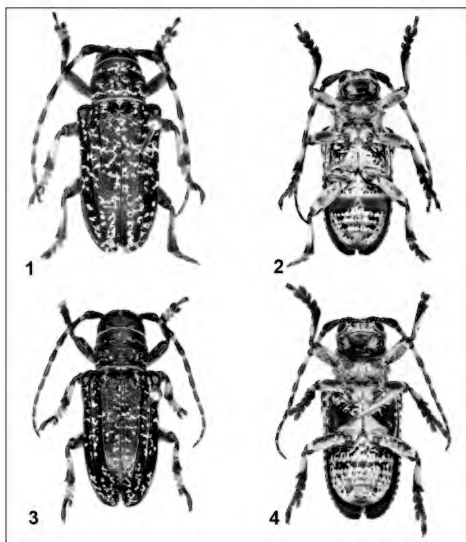


Taxonomy

The two species *R. solida* and *R. vermicularia* are similar, being predominantly black with white pubescent tracery (Moore 1996) particularly on the dorsal surface, e.g. Figs 1-5. On the ventral surface, they are more patterned with white on black (e.g. Figs 2, 4). Our two specimens resemble more the type specimen of *R. solida* as illustrated in Slipinski and Escalona (2013), in the degree of unpatterned white tracery on the black background colour of the cuticle, than specimens in the collection of the Department of Agriculture and Fisheries, Dutton Park, Brisbane, identified as *R. vermicularia* (J.S. Bartlett, pers. comm.) (Figs 10, 11), which have the white tracery more patterned and denser. Unfortunately, Slipinski and Escalona (2013) didn't examine the type for *R. vermicularia* and this has made our comparison of the two species difficult, and until more material is examined we have tentatively assigned the Mt. Cotton specimens to *R. nr solida*.

Acknowledgements

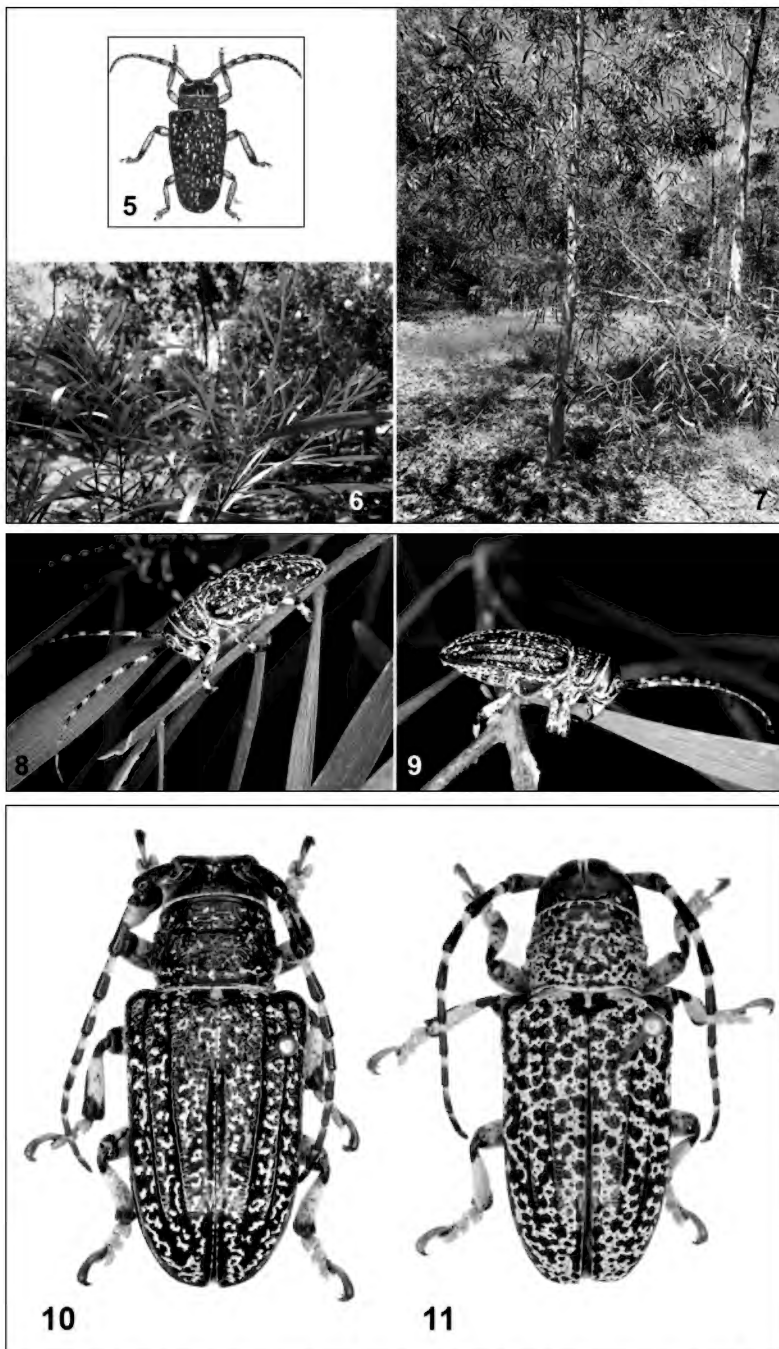
We thank Justin Bartlett of the Department of Agriculture and Fisheries, Dutton Park, Queensland for his review of our *Rhytiphora* specimens and the specimens in his care in the DAF collection. Appreciation is given to L. Hughes of Mt. Cotton, Qld for allowing access to her property.



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Figs 1-4. *Rhytiphora* species nr *solida*. All figures not to scale [lengths, in mm, in square brackets]. (1, 2) ♂, Mt. Cotton, Qld, 18.i.2016 [20 mm], (1) habitus, dorsal, (2) habitus, ventral; (3, 4) ♀, Mt Cotton, Qld, 18.i.2016 [22 mm], (3) habitus, dorsal, (4) habitus, ventral.

Figs 5-7. (5) *Rhytiphora* species nr *solida* (ink drawing, A.A. Davies); (6, 7) *Acacia implexa*, (6) juvenile foliage, (7) mature plant.

Figs 8, 9. *Rhytiphora* species nr *solida*, Mt. Cotton, Qld: (8) stripping epidermis from stems of *Acacia implexa*, (9) wrapping legs around and clamping stems with mandibles of *A. implexa*.

Figs 10, 11. *Rhytiphora vermicularia*: (10) habitus dorsal, Dunmore S.F., Qld, 20.xi.1987 [26 mm], (11) habitus dorsal, Kingaroy, Qld, 23.i.1987 [24 mm].

Illustrations by Alexander Davis

Life history notes on the Evening Brown, *Melanitis leda bankia* (Fabricius, 1775) Lepidoptera: Nymphalidae) – Wesley Jenkinson



The Evening Brown is encountered from coastal areas across to regions west of the Great Dividing Range from north-eastern Queensland to north-eastern New South Wales and occasionally further south. The species is also present in northern areas of Western Australia and the Northern Territory.

The species is encountered in a wide variety of habitats and favours moist gullies where tall grasses are established, as well as in suburban gardens. Adults are often found resting amongst dead leaves and grass beneath large mango trees when

decaying fruit is present on the ground. During favourable seasons the adults can be very common during the late wet season.

At dawn and particularly dusk the adults become active with a rather strong erratic flight. During these periods the males can be observed perching on low vegetation or grass blades defending territories by frequently chasing off rival males.

Typically during daylight hours, adults settle with wings closed amongst tall grass and leaf litter in shady areas. When disturbed during sunny periods of the day they fly rapidly for several metres and resettle in a sheltered shady position.





One of the adults presumably imbibing chemicals from a dried *Lantana camara* flower.

Unlike the majority of butterflies, the adults feed from fallen rotting fruit and tree sap rather than flowers. During May 2012 near the Perry River west of Bundaberg in south-east Queensland, J. Moss and myself observed several adults apparently feeding on dried *Lantana camara* flowers. This was around midday in warm conditions with a light cloud cover. The adults feeding on the dried flowers were thought to be imbibing a chemical residue produced by the plant.

As illustrated in Braby 2000, there are two seasonal forms being a 'wet' season and a 'dry' season form. The underside of the dry season form is remarkably variable while the underside of the wet season shows little variation. The sexes are quite similar in appearance. To separate the sexes of wet season adults, in comparison to the males, the females have a much larger indent (virtually absent in the male) along the forewing termen and the two white spots within the black patch on the upperside of the forewing are larger. These markings are also surrounded with a more conspicuous patch of yellowish orange.

The dry season adults are more difficult to sex. In comparison to the males of this form, the females have a slightly broader indent along the forewing termen, the two white spots within the black patch on the upperside of the forewing are marginally larger, and the abdomen is slightly wider. The orange on the upperside forewings of the male is also generally a slightly darker, richer colour.



***Melanitis leda bankia* (Evening Brown) Wet Season Form**

Images left to right: male, female,





***Melanitis leda bankia* (Evening Brown) Wet Season Form**

Images left to right: male underside, female underside

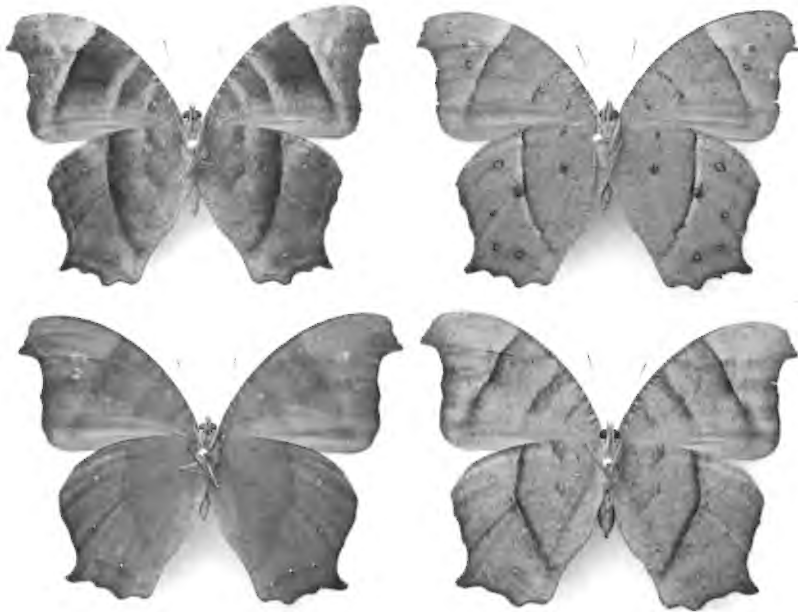
Dry season forms are larger than those of the wet season; wingspans for the pictured wet season form males and females are 55mm and 60mm respectively and similarly the dry season form males and females are 65mm and 75mm.



***Melanitis leda bankia* (Evening Brown) Dry Season Form**

Images top left to right: male, female, Images lower left to right: male underside, female underside





Dry season form underside colour variations

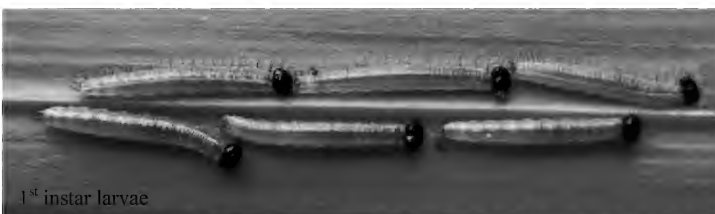
In January 2008 a female was collected at Beaudesert in south-eastern Queensland and kept in captivity. She laid a cluster of fifteen eggs and was then released. These eggs were laid on the underside of a leaf of the exotic host grass Green Panic (*Megathyrsus maximus*, formerly *Panicum maximum*), a known host plant. The larvae were subsequently raised on this host.

This species utilises a large range of native and exotic broad-leaved grasses in the *Poaceae* family.



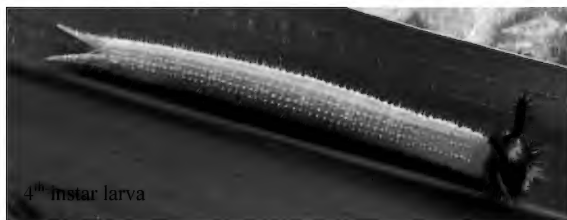
Freshly laid eggs

The eggs were pale yellow, smooth, off spherical, approximately 1.4 mm wide x 1.2 mm high



1st instar larvae





First instar larvae consumed the eggshells soon after emergence and rested in clusters below a leaf midrib near where they were feeding. They fed from the edge of the leaf to the midrib. The later instar larvae chewed across the leaf midrib and were observed feeding during daylight hours. A fine pad of silk was spun on the underside of the leaves on which they rested when not feeding. Some larvae attained a length of 50mm which is quite large considering the size of the adult body. In the wild, the later instar larvae are usually found resting and feeding solitarily.



The bright green pupae measuring up to a length of 21mm were located below stems of the host plant. They were attached with silk by the cremaster with the head hanging downwards.

The total time from egg to adult varied between 39 days to 56 days. The first adult to emerge had egg duration of 5 days, larval duration 22 days and pupal duration of 12 days.



Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have adult records for all months of the year. In south-eastern Queensland, the wet season form is more abundant from December to March and the dry season form is sometimes very common during April and May just after the wet season. Individuals of either form can appear throughout the year.

Acknowledgement: I would like to thank John Moss for commenting on the manuscript.

Reference:

Braby, M.F., 2000. *Butterflies of Australia – Their Identification, Biology and Distribution*. vol 2. CSIRO Publishing, Melbourne.

Photos Wesley Jenkinson

A new aphid arrival - the Asian Woolly Hackberry Aphid (*Shivaphis celti*) – Peter Macqueen 12/2/17

Australia has over 160 species of aphid both native and many introduced species. New introductions are often known crop pests so receive significant attention to their management. A relatively new aphid introduction to Australia is the Asian Woolly Hackberry Aphid (*Shivaphis celti*) that has arrived and spread relatively unnoticed, although many readers have probably encountered its honey dew on, or under, the prolifically weedy *Celtis* tree, *Celtis sinensis*. It has rapidly become a feature of *Celtis* trees, leaving them having copious amounts of sooty mould over the foliage and large numbers of the white fluffy aphids under the leaves (Fig.1).



Fig.1 Typical sooty mould and yellowing as a result of *Shivaphis celti* infestation

The Asian Woolly Hackberry Aphid is a small aphid 2-3mm long and covered with a copious white waxy covering. As many aphids will do, it produces a large quantity of honeydew that is excreted on and below the host plant. As the *Celtis* is deciduous the aphid overwinters as eggs on the stem and then reproduces parthenogenically through the summer months to build populations (Fig. 2).



Fig.2 *Shivaphis celti* on Celtis leaf



It was first recorded in Sydney in 2013 (Ridgeway), on blackberry plants from its native China, and rapidly spread from that known introduction into trees in Southern Queensland within 2 years. Upon arrival in Australia, the Consultative Committee on Emergency Plant Pests did not regard it as an emergency plant pest to warrant any formal control measures (Ridgeway and Burgess-Buxton 2014).

It has a relatively recent history of introduction and rapid spread in the USA also. It was introduced to South Eastern USA in the 1990's and California and Texas a decade later where there is little damage to its host plant, *C. sinensis*. (Bartlett, 2005).

This remarkably rapid spread was undoubtedly hastened by the wide spread dispersal of *C. sinensis* in waterways and urban areas along Eastern Australia. The fruit of the *Celtis* are relished by cockatoos and other birds, so the movement of birds has had a significant role in the insect's dispersal.

The implications of the presence of this Chinese insect are difficult to quantify. No steps were taken to manage it upon arrival as it feeds on the exotic *C. sinensis*, but has not had a sufficient impact, despite numbers, to be regarded as a biological control agent. It may, however, encourage the removal of *Celtis* trees due to the messy honey dew they produce.

Observations in a range of areas have indicated that, like many aphids, it is very host specific although there are related host plants, being recorded on a range of *Celtis* species (Halbert and Choate, 2014). Widely grown related susceptible genera could include members of the Ulmaceae, *Celtis australis*, and native *Celtis* species. *Shivaphis* has not been observed on *C. australis* possibly because of the rough nature of the leaf surface.

It will be interesting to observe its effects on exotic species and to monitor for it on native species.

Bibliography:

Bartlett, T., 2005, Species *Shivaphis celti* - Asian Woolly Hackberry Aphid.

<http://bugguide.net/node/view/18904> viewed 30/5/16

Halbert, S.E., and Choate, P.M, 2014, Asian Woolly Hackberry Aphid, *Shivaphis celti* Das (Insecta: Hemiptera: Aphididae) University of Florida

https://www.researchgate.net/publication/237589075_Asian_Woolly_Hackberry_Aphid_Shivaphis_celti_Das_Insecta_Hemiptera_Aphididae1 (Accessed 30/5/16)

Lawson, A, 2014, Asian Woolly Hackberry Aphid Center for Invasive Species Research, University of California, Riverside. <http://cistr.ucr.edu/hackberry.html> (accessed 11/2/17)

Ridgeway, P and Burgess-Buxton, A, 2014, Dr Jekyll and Mr Hyde – recently introduced pathogens of invasive flora may threaten endangered native species.

http://www.apph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/biosecurity/Additional_Documents (Accessed 30/5/16)

Photos Peter Macqueen



They have finally arrived! – Bob Miller

One of the more common questions I was being asked by butterfly enthusiasts when they visited me in Cairns was “Do you think The Tawny Coster (*Acraea terpsicore*) will ever get to Cairns and if so, when do you think it will happen?”

Well, we don’t have to guess any longer. I saw my first one (a female) in the front yard on the March 27th. The next one I saw was also a female, at the same place, but on the next day.

This one I captured and put her in my breeding cage, in the hope she would lay some eggs which I could then raise to adulthood and get the life-cycle photos. Having captured this one, I then needed to find the foodplant for her to lay on. I drove to near the Cairns airport, where there is a lot of different vegetation. On the way there, they were hitting the car in numbers, only exceeded by those of the Caper Whites and Blue Tigers that had migrated earlier.

After getting out of the car, I noticed the adults were feeding on low-growing weed flowers and so picked up another four with just my fingers, all females.

I spent a good couple of hours looking for one of the right foodplants for them to lay on but without success. That afternoon, I went to the local boat ramp, where I was successful. Whilst there, a female *A. terpsicore* landed on the *Passiflora* beside me and commenced laying eggs. She ended up laying seventy six of them, taking about twenty minutes to complete the task.

These all hatched on the night of April 2nd. They then commenced eating and eating and eating, typical of *Acraea* larvae. They grew to full size and pupated on anything that was horizontal on April 16th, eventually emerging as adults on April 23rd.

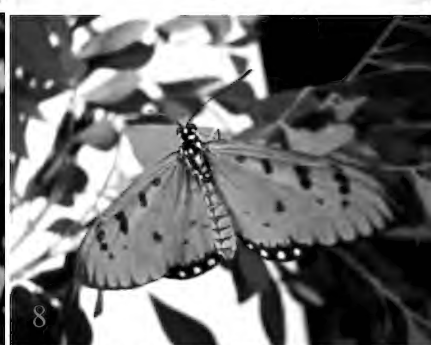
Apart from the eggs that the *A. terpsicore* layed, the local *A. andromacha* were also laying eggs on the same plants. I found another five batches of eggs and wondered how they were all going to survive on the foodplants available.

That question was answered when they were about half grown. The Green ants found them and took every last one! Without that happening, I’m sure they would have run out of foodplant and died anyway.

The last report I have heard was that they have already passed through Kelso in Townsville, still heading South.

What will happen if they get down past the southern limit of the Green ants?







1 & 2 *Acraea terpiscore* eggs
5 & 6 *A. terpiscore* pupae
9 & 10 *A. terpiscore* male

3 & 4 *A. terpiscore* larvae
7 & 8 *A. terpiscore* female

Photos Bob Miller

The Scarlet Jezebel (*Delias argenthona*) – Hongming Kan

Commonly known as Jezebel butterflies, genus *Delias* is a group of beautiful butterflies with stunning combinations of colours of red, yellow, black and white. I remember clearly the first time when I spotted a Black Jezebel resting on a leaf in Karawatha forest I was so impressed by the intricate colour patterns on its wings that I couldn't help wondering if God had doodled on them.

In **Butterfly Lovers**, one of the most famous ancient Chinese folktales, after the tragic death of two young lovers their spirits turned into beautiful Red-Based Jezebel butterflies (*Delias pastithoe*) and rushed out of the grave to stay together forever. One day in October 2016, Ross told me he discovered eggs and larvae of the Scarlet Jezebel on mistletoe, knowing that I was very keen on photographing them. Except for the common Black Jezebel butterflies, I had never had a chance to see other live Jezebels before. A few days later, we returned to the park together where Ross had made the discovery. There were three low hanging mistletoes (*Amyema miquelii*) growing on gum trees and Ross had been checking on them for years but had not found anything until this year.

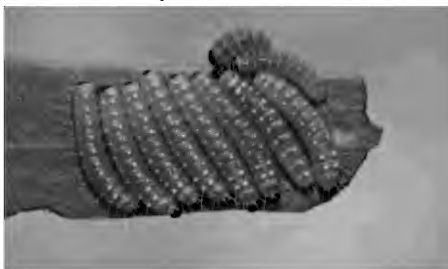
The eggs were laid together haphazardly in clusters on the mistletoe leaves. The egg of the Scarlet Jezebel is actually quite beautiful. Oval in shape, it has a corolla-like structure on one end and a flat bottom on the other. White ridge lines can be seen clearly running vertically along the surface of the egg, connecting the corolla and the



flat bottom. In some eggs, the little black heads of the larvae were clearly visible, meaning the larvae would soon hatch.

Unlike other butterfly larvae I had seen before, the early instars of Scarlet Jezebel were gregarious. They seemed to enjoy the company of one another.

Being a seasoned butterfly breeder, Ross told me Scarlet Jezebel larvae don't seem to do well on the cuttings of the leaves and the best way to raise them is to leave them on the host plant enclosed by a sleeve in order to keep them safe from parasites and that was exactly what we did for them.



20 days later, when we returned, most of the larvae had reached final instars and a lot of them had already pupated. Just like the early instars, the late instars were also gregarious, sharing food and resting together on the leaves. Judging by the big sizes of the larvae, we knew they were very healthy and would metamorphose into big butterflies.



Not only did they eat and rest together, but also pupated together in groups.

I took some pupae home to photograph the adults. One week later, the beautiful butterflies emerged.



Photos Hongming Kan



BOOK REVIEW



Evoking Happiness

The Language of Butterflies from around the World Vol.1 – Makoto Nakae – Softcover 80pp 140 x140 x 9mm – Privately published – Reviewed by *Alan Hyman* – available through BOIC and selected outlets \$12 approx. This book was first published in Japanese in mid-2016.

Makoto Nakae has carried out scientific and field-based entomological work in more than 30 countries, described two new subspecies of Asian Papilionidae, donated his butterfly collection to a Japanese museum and has two university degrees. It is therefore somewhat of a surprise that he has chosen to compile this attractive but somewhat enigmatic little book which defies classification. The cover's title and whimsical butterfly illustration are more reminiscent of styles found in the 'Religion and Philosophy' or 'Self-help' sections of a bookshop and the butterfly depictions (photographs of set specimens) would not be out of place in a lepidopteran field guide. Yet the book belongs to none of these categories, or to be more precise, it draws on elements from all of them with its own individual twist. In all, 36 species (33 butterflies and 3 moths) are featured, mostly from the Asia and Pacific regions with a sprinkling from South America and Africa.

It would seem that the book's prime purpose is to suggest the emotion or impression that the initial contact with each butterfly would spontaneously evoke in the observer. The layout follows a simple template with two facing pages allocated to each species. The left-hand page has the emotive caption as the heading with the butterfly image immediately below (there is no indication of scale) followed by the English name, locality, and area of distribution. The right-hand page features the scientific name, a one or two line comment on the species plus a captioned location photograph and country flag. Interestingly, at the top there is a 'Birth Butterfly' notation – an astrological reference to the zodiac whose signs and dates change in sequence every few pages to complete a calendar year. There are also some anomalies and typographical quirks but ironically these all add a certain naïve charm. Some species have captions whose inspirations are fairly obvious. For example, the black and green Philippine Banded Peacock (*Papilio daedalus*) has the endowed title 'Dignified appearance' and the locality, distribution and landscape photo all seem relevant (even if the associated comment is a little basic). However, the Cypris Morpho (*Morpho cypris*) has as its evocation 'We are meant to be together'. The



locality is given as Bogota, Colombia; its distribution, Colombia; and in the comments ‘....it lives in the mining areas of Colombia’ yet the landscape photo is of farmers drying cocoa leaves by a Peruvian roadside. Maybe the ‘locality’ specified is where the individual specimens illustrated were each captured and the location photos often not so much definitive habitats as regional ‘atmospheric’ images. The only specifically Australian species depicted is the Joseph’s Coat Moth (*Agarista agricola*) whose emotive caption ‘Flaming passion in the heart’ is somewhat let down by the dull, obscure red on the hind wings and location photo featuring a south Queensland termite mound.

In any event, the book is what it is. The work would benefit greatly from an introduction to briefly explain its purpose (maybe this will be incorporated into the implied second volume). Apart from a quote in French (with presumably the Japanese equivalent beneath) plus a pen and ink Swallowtail sketch, it launches directly into its content. Also, as the author’s impressions of the various butterflies’ characteristics are personal and hence highly subjective, it would be useful to designate a space on the page where the reader could add his or her own instinctive interpretative feelings, thus involving the individual personally and intimately in the spirit of the book. From a sales perspective, possibly the most effective display location would be at the cash terminal where the book would say ‘buy me as well’, making an attractive small gift for anyone unfamiliar with butterflies and introducing a lighter, more ‘philosophical’ alternative to the disciplined and technical field guides available. The book would also make a unique addition to such places as magazine tables in dental surgeries, medical centres or in post-operative circumstances where patients could relax with this as a refreshing and uncomplicated therapeutic diversion. If happiness truly could be evoked in these often stressful conditions, the book’s aim will surely have been realised.

REPORTS

Australian Native Bees – A talk by Erica Siegel at the AGM on 1st April 2017 – *Bernie Franzmann*

This is one reason I joined the club; to hear talks like this one. Thank you, Erica.

As a career entomologist, I thought I knew a fair bit about the Australian insect fauna, but Erica taught me a new appreciation of our native bees.

She told us about: blue-banded bees, teddy bear bees, leaf cutter bees, cuckoo bees, resin bees, carpenter bees, reed bees, masked bees and Homalictus bees.

Now, Erica is not an entomologist but has been described as “A Fauna Enthusiast.” Her interest in bees started about 2009 when she observed blue banded bees. Now she is an expert on native bees. She is perhaps particularly noted for her excellent photos.



Many of her photos grace the pages of the latest publications on bees in Australia, including, *The Australian Native Bee Book* and *The Australian Beekeeping Manual*.

There is not enough space here to tell you all she told us, so I will tell you some of the things that I did not know before, or found most interesting.

- Solitary bees have stings but are docile because they don't have to defend a hive.
- Many bee nests are attacked by cuckoo bees. They act in much the same way as cuckoo birds. The blue banded bees are attacked by the neon cuckoo bee, which has striking vivid patterns.
- Greenhouse tomato growers have been trying to get approval to bring bumble bees from Tasmania to the mainland, to be used as pollinators. Erica told us that blue banded bees, which are common in Brisbane, might be just as good as pollinators.
- Leaf cutter bees, which make those distinctive circular patches in the leaves, can cut the sections in less than two seconds. I always imagined them gnawing away for at least a couple of minutes.
- One species of carpenter bee feed their newly emerged adult progeny for some time.
- Most bees have special structures on their bodies to carry pollen but masked bees don't and so they swallow the pollen to carry it.

Native bees must be pretty common. Erica has seen 26 species in her garden in Redland City, Qld.

Erica has amassed an enormous amount of information from research and observation from only the past few years, and she imparted some of this to us in an interesting talk, made easy to understand with her amazing photos.

Trip Report Sunday 9th April 2017 – *Keith Treschman*

Pleasant conditions heralded the morning start of the field trip for 5 club members. Permission was obtained for entry to the sporting grounds at Fig Tree Pocket of Brisbane Girls Grammar School in Brisbane. The area is flanked by Cubberla Creek along which the School has embarked on environmental improvements. As exotic plant species are being removed in stages, native specimens are taking their place. Volunteer students, usually numbering about 60, perform plantings 3 times each year. Since May 2014, 4000 plants and shrubs have been established, with species selected for their attracting qualities for birds and butterflies.

Protected noticeboards display 2 posters of 223 birds that could potentially be seen in the area and a poster of 82 butterfly species. These have been produced as individual cards by students in their computer studies.



A structure in 2 parts 3m tall has been erected where intended canopy trees have been planted along with 72 *Pararistolochia praevenosa* vines to provide habitat for *Ornithoptera richmondia* (Richmond Birdwing). With the hot weather and a recent flood, about half the vines have survived and a reasonable proportion of the trees.



Structure for planting to attract
Richmond Birdwing

Species sighted on the morning were *Graphium sarpedon* (Blue Triangle), *Phaedyra shepherdii* (White-banded Plane), *Papilio aegaeus* (Orchard Swallowtail), *Nacaduba berenice* (Large Purple Line-blue), *Euploea core* (Common Crow), *Catopsilia pomona* (Lemon Migrant), *Acraea andromacha* (Glasswing), *Catopsilia pyranthe* (White Migrant), *Junonia villida* (Meadow Argus).

Photo Keith Treshman

IN THE GARDEN

with *Peter Hendry*

It's the 28/04/2017 and the weather is cooling with a reported minimum of 10°. The shining sun is being enjoyed by the small blue butterflies known as Zebra Blues (*Leptotes plinius*). They are in numbers around my exotic *Plumbago auriculata*. Though I also grow the native *Plumbago zeylanica*, *P. auriculata* is a larger plant and much more floriferous which is great for the Zebra Blue as the larvae feed on the buds and flowers. There are several eggs on the budding flower spikes (Fig. 3) though one impatient female could not wait for the spike to develop (Fig. 4). I could find no sign of larvae. Because of the cooling weather, the eggs can lay dormant until it warms up. Also enjoying the flowers are some very small native bees (Fig. 5), probably *Trigona* spp.



Fig. 1



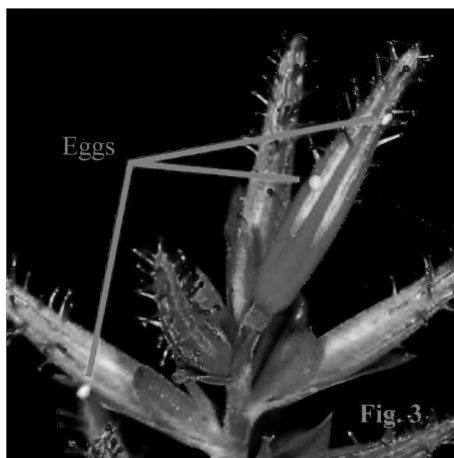


Fig. 1 Male Zebra Blue (*Leptotes plinius*).
 Fig. 2 Female Zebra Blue
 Fig. 3 Eggs
 Fig. 4 Ovipositing
 Fig. 5 Native bee

Photos Peter Hendry

LETTERS



Photo Peter Macqueen

A wasp with *Beauveria bassiana*, a type of entomopathogenic fungus. Someone may be able to add some details. *Peter Macqueen*

Ed.: I contacted www.fungimap.org.au who confirmed that it was *Beauveria* (*Cordylops*) *bassiana* (the white fluffy mycelium). They asked if we knew the species of wasp. Can anyone advise?

Regarding the fungus

https://en.wikipedia.org/wiki/Beauveria_bassiana says-



“*Beauveria bassiana* is a fungus that grows naturally in soils throughout the world and acts as a parasite on various arthropod species, causing white muscardine disease; it thus belongs to the entomopathogenic fungi. It is being used as a biological insecticide to control a number of pests such as termites, thrips, whiteflies, aphids and different beetles. Its use in the control of bedbugs and malaria-transmitting mosquitos is under investigation.”



At last, we caught these Tailed Emperors on camera! We want to show everyone.
CheersGlenis & George Gibson

Also from the Gibsons

On April 2nd at roughly 10 am, I had a brief visit from a Green Spotted Triangle. It settled on the *Micromelum minutum* for a few seconds then it was gone. It was a very green colour, 'verdant' in the artist's world. I believe the wind must have brought it in. I hope I see it again.

Ed.: Glenis and George live at Captain Creek, Qld. Thinking that the Green Spotted Triangle

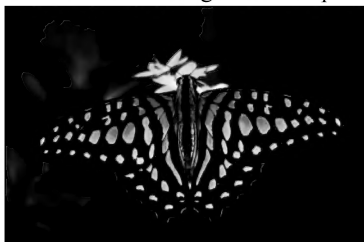


Image from Garry's CD "Garden on the Wing"

only occurred in the Tropics, and possibly the fact that it was observed between Bundaberg and Gladstone at that time was related to the recent cyclone, I asked Garry Sankowsky. He replied, "In 1974 when the monsoon trough went down as far as Brisbane the Green Spotted Triangle and Blue Banded Eggfly made a push south. The Green Spotted got as far as Eurimbulah (north of Bundaberg) and the Blue Banded got to Byron Bay. The climate is not much different from Yeppoon down to Bundaberg and there is a huge amount of suitable habitat all along the coast with endless host plants. They have probably been ticking

over in that area or the above average temperatures this season may have enticed them to move from Yeppoon. I don't think the cyclone had anything to do with it as the winds were blowing the opposite way (south to north). The Green Spotted does push out at times. Twice I have seen them at the 40 Mile Scrub, west of Mt Garnet but they do not breed there permanently. Usually with these moves, a few years with normal and below normal temperatures finishes them off.

Also, I don't think the cyclone had anything to do with the *Acraea terpsicore* invasion. They hit Queensland from Torres Strait to south of Townsville and were on the Torres Strait months before the cyclone. Good rains in the inland would have made the *Hybanthus* plants proliferate and, as usual with a one off brood, there were very few parasites and the survival rate was sky high. This happens with Glasswings in WA and they defoliate all the *Adenia* vines. Next generation the parasites catch up. If they migrate they then beat the parasites by moving to a new area, like the Caper White does."



ERRATA

The following errors as corrected pertain to the Daisy Hill Field Trip, as reported in our last magazine [issue #84].

pp 32 & 33 *Passiflora aurentia* (should be *P. aurantia*)

pp 33 & 37 *Imperata cylindrical* (should be *I. cylindrica*)

p 37 *Capparis spinosa* (should be *Capparis arborea*)

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Ridge Track, Goomburra section of Main Range National Park

When: 10am 15th July 2017

Where: The Ridge Track, Goomburra section of Main Range National Park

How to get there: Follow the Cunningham Highway past Cunningham's Gap to Gladfield (Driver Reviver stop) and turn right into Allora-Goomburra Road. Turn right into Inverramsay Road at Goomburra. This becomes The Forestry Reserve Road at the end of which is the Manna Gum Camping area.

The Walk: Class 4, 5 km return. Walk starting from Manna Gum Camping Area

Amenities: Toilets, picnic areas.

What you may expect to see: Macleay's Swallowtail butterfly, Albert's Lyrebird and other birds and butterflies.

Other info: The first section of the Ridge Track is very steep and contains sections of slippery shale. Allow 15 to 20 min to walk 1km. This time is calculated for people of average fitness and bushwalking experience and who are wearing correct footwear.

RSVP: Phone Paul Klicin on 0411 031 406 or email him at paulez2@hotmail.com

Planning and General Meeting

What: Our quarterly planning meetings are informative and interesting and we welcome members to contribute to discussion. This meeting will be followed by a presentation by Rob Whyte, co-author of *A Field Guide to Spiders of Australia*, the most comprehensive book on Australian spiders ever published.

When: 10am Saturday 12th August, 2017

Where: Downfall Creek Bushland Centre, 815 Rode Rd., McDowall

What to bring: Enthusiasm is welcome. Tea, coffee and biscuits will be provided

Decker Park, Twenty Fifth Ave, Brighton QLD 4017

When: 10am 26th August, 2017

Where: Cnr Twenty-fifth Ave & Flinders Parade Brighton

How to get there: Turn right onto the Hornibrook Highway just before the Hornibrook Bridge to Redcliffe. The park is immediately to the left on 25th Avenue.

Amenities: Toilets, Picnic tables.

What you may expect to see: Many varieties of Mistletoe on Casuarina.

RSVP: Phone Paul Klicin on 0411 031 406 or email him at paulez2@hotmail.com



DISCLAIMER

The magazine seeks to be as scientifically accurate as possible but the views, opinions, and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Andrew Atkins who provided the cover painting
- Daphne Bowden who works on layout, production, and distribution
- John Moss, Kelynn Dunn, Bernie Franzmann and Ross Kendall for scientific referencing and proof-reading of various articles in this issue of the magazine

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Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

**Next event: Ridge Track, Goomburra section of Main Range National Park
15th July 2017 – see Programme for details**

